space in cubic meters (feet) must be equal to the gross volume of the space in cubic meters (feet) divided by 480 (30 if using pounds).

(ii) System piping must be of at least 19 millimeters (0.75 inches).

(iii) No specific discharge rate is required.

(7) A lockout valve must be provided on any carbon dioxide extinguishing system protecting a space over 6,000 cubic feet in volume and installed or altered after [July 9, 2013. ''Altered'' means modified or refurbished beyond the maintenance required by the manufacturer's design, installation, operation and maintenance manual.

(i) The lockout valve must be a manually operated valve located in the discharge manifold prior to the stop valve or selector valves. When in the closed position, the lockout valve must provide complete isolation of the system from the protected space or spaces, making it impossible for carbon dioxide to discharge in the event of equipment failure during maintenance.

(ii) The lockout valve design or locking mechanism must make it obvious whether the valve is open or closed.

(iii) A valve is considered a lockout valve if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it.

(iv) The master or person-in-charge must ensure that the valve is locked open at all times, except while maintenance is being performed on the extinguishing system, when the valve must be locked in the closed position.

(v) Lockout valves added to existing systems must be approved by the Commandant as part of the installed system.

(8) Each carbon dioxide extinguishing system installed or altered after July 9, 2013, must have an approved odorizing unit to produce the scent of wintergreen, the detection of which will serve as an indication that carbon dioxide gas is present in a protected area and any other area into which the carbon dioxide may migrate. ''Altered'' means modified or refurbished beyond the maintenance required by the manufacturer's design, installation, operation and maintenance manual.

(g) *Specific requirements for Halon 1301 systems.* (1) A custom engineering fixed gas fire extinguishing system, which uses Halon 1301, must comply with the applicable sections of UL 1058 (incorporated by reference, see 46 CFR 175.600) and the requirements of this paragraph (g).

(2) The Halon 1301 quantity and discharge requirements of UL 1058 apply, with the exception that the Halon 1301 design concentration must be 6 percent at the lowest ambient temperature expected in the space. If the lowest temperature is not known, a temperature of −18 °C (0 °F) must be assumed.

(3) Each storage cylinder in a system must have the same pressure and volume.

(4) Computer programs used in designing systems must have been approved by an independent laboratory.

NOTE TO §181.410(g): As of Jan. 1, 1994, the United States banned the production of Halon. The Environmental Protection Agency placed significant restrictions on the servicing and maintenance of systems containing Halon. Vessels operating on an international voyage, subject to SOLAS requirements, are prohibited from installing fixed gas fire extinguishing systems containing Halon.

[CGD 85–080, 61 FR 982, Jan. 10, 1996; 61 FR 20557, May 7, 1996, as amended at 62 FR 51358, Sept. 30, 1997; USCG–2000–7790, 65 FR 58465, Sept. 29, 2000; USCG–2003–16630, 73 FR 65206, Oct. 31, 2008; USCG–2006–24797, 77 FR 33891, June 7, 2012]

§181.420 Pre-engineered fixed gas fire extinguishing systems.

(a) A pre-engineered fixed gas fire extinguishing system must:

(1) Be approved by the Commandant;

(2) Be capable of manual actuation from outside the space in addition to automatic actuation by a heat detector;

(3) Automatically shut down all power ventilation systems and all engines that draw intake air from within the protected space; and

(4) Be installed in accordance with the manufacturer's instructions.

(b) A vessel on which a pre-engineered fixed gas fire extinguishing system is installed must have the following equipment at the operating station:

(1) A light to indicate discharge;

(2) An audible alarm that sounds upon discharge; and

(3) A means to reset devices used to automatically shut down ventilation systems and engines as required by paragraph (a)(3) of this section.

(c) Only one pre-engineered fixed gas fire extinguishing system is allowed to be installed in each space protected by such a system.

§ 181.425 Galley hood fire extinguishing systems.

(a) A grease extraction hood required by 46 CFR 181.400 must meet UL 710 (incorporated by reference, see 46 CFR 175.600) or other standard specified by the Commandant.

(b) A grease extraction hood must be equipped with a dry or wet chemical fire extinguishing system meeting the applicable sections of NFPA 17 or NFPA 17A (both incorporated by reference, see 46 CFR 175.600), or other standard specified by the Commandant, and must be listed by an independent laboratory recognized by the Commandant.

[USCG–2003–16630, 73 FR 65206, Oct. 31, 2008]

§ 181.450 Independent modular smoke detecting units.

(a) An independent modular smoke detecting unit must:

(1) Meet UL 217 (incorporated by reference, see 46 CFR 175.600) and be listed as a ''Single Station Smoke detector—Also suitable for use in Recreational Vehicles,'' or other standard specified by the Commandant;

(2) Contain an independent power source; and

(3) Alarm on low power.

(b) [Reserved]

[CGD 85–080, 61 FR 982, Jan. 10, 1996, as amended by USCG–2003–16630, 73 FR 65207, Oct. 31, 2008]

Subpart E—Portable Fire Extinguishers

§ 181.500 Required number, type, and location.

(a) Each portable fire extinguisher on a vessel must be of an approved type. The minimum number of portable fire extinguishers required on a vessel must be acceptable to the cognizant OCMI, but must be not less than the minimum number required by Table 181.500(a) and other provisions of this section.

TABLE 181.500(a)

Space protected	Minimum No. required	Type extinguisher permitted		
		CG class	Medium	Min size
Operating Station	1	B-I, C-I	Halon	1.1 kg (2.5 lb).
			CO_2	1.8kg (4 lb).
			Dry Chemical	0.9 kg (2 lb).
Machinery Space	1	B-II, C-II located just outside exit.	CO_2	6.8 kg (15 lb).
			Dry chemical	4.5 kg (10 lb).
Open Vehicle Deck	1 for every 10 vehicles.	B-II	Foam	9.5 L (2.5 gal).
			Halon	4.5 kg (10 lb).
			CO_2	6.8 kg (15 lb).
			Dry Chemical	4.5 kg (10 lb).
Accommodation Space.	1 for each 232.3 square meters (2,500 square feet) or fraction thereof.	A–II	Foam	9.5 L (2.5 gal).
			Dry Chemical	4.5 kg (10 lb).
Galley, Pantry, Concession Stand.	1	A-II, B-II	Foam	9.5 L (2.5 gal).
			Dry Chemical	4.5 kg (10 lb).

(b) A vehicle deck without a fixed sprinkler system and exposed to weather must have one B-II portable fire extinguisher for every five vehicles, located near an entrance to the space.